BERGMAN, A.G.

"The Surface of Crystallization in the Constitutional Diagram of the Ternary System Composed of the Chlorides of Sodium, Potassium, and Cadmium, by I. I. Il'yasov, A. K. Bostandzhiyan, and A. G. Bergman, Rostov-na-Donu Engineering-Construction Institute, Zhurnal Neorganicheskoy Khimii, Vol 2, No 1, Jan 57, pp 172-178

The ternary system Na, K, Cd//Cl was subjected to investigation. The constitutional diagram which was obtained differed in some essential respects from that determined by non-USSR scientists. It was established that the stable compound $KCl.CdCl_2$ is formed, which melts without decomposition, and that the unstable compounds $4KCl.CdCl_2$ and $2NaCl.CdCl_2$, which melt with decomposition, are also formed.

SUM. 1305

BERGMAN, A. G.

AKOPOV, Ye.K.; BERGMAN, A.G.

Interrelation between fused alkali metal sulfates and thallium. Part 1: The ternary system of lithium, potassium, and thallium sulfates. Zhur. neorg. khim. 2 no.1:193-200 Ja '57. (MLRA 10:4)

1. Kubanskiy sel'skokhozyaystvennyy institut, Kafedra organicheskoy, fizicheskoy i kolloidnoy khimii.
(Alkali metal sulfates) (Thallium sulfates)
(Systems (Chemistry))

Bergman, A. G.

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria, Physical-Chemical Analysis, Phase Transitions. B-8

Abs Jour: Referat. Zhurnal Khimiya, No 2, 1958, 3818.

Author : A.G. Bergman, I.I. Il'yasov.
Inst : Institute of Organic and Inorganic Chemistry of Academy of Sciences of USSR.
Title : Fusibility Graph of Cadmium and Potassium Chloride and Iodide Reciprocal System.

Orig Pub: Zh. neorgan. khimii, 1957, 2, No 2, 295-406.

Abstract: The fusibility graph of the reciprocal system K, Cd // Cl, I was studied by the visual-polythermal method. Considering the dissociation of CdI_2, the system study was carried out only in the more easily fusible part at temperatures $\leq$ 550°. The data concerning binary systems were rendered more exact and completed. At the study of the CdI_2 - K_2I_2, the existence of following compounds dissociating at their melting was

Card : 1/2 -55-

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria, Physical-Chemical Analysis, Phase Transitions. B-8

Abs Jour: Referat. Zhurnal Khimiya, No 2, 1958, 3818

established: $CdI_2.KI$ (223°) and $CdI_2.2KI$ (272°). The system $CdCl_2$ - CdI_2 is characterized by an eutectic at 360° and 31 equ. % of $CdCl_2$ and a homeomorphous conversion of $CdCl_2$ at 460°. In the system $CdCl_2$ - KCl, the compound $CdCl_2.KCl$ melting without dissociation at 428° and the compound $CdCl_2.4KCl$ dissociating when melted (462°) were revealed; polymorphous transitions of both these compounds were discovered at 375 and 389° respectively. The presence of 11 crystallization fields and 6 non-variant points was established on the graph of the reciprocal system. The system is divided into 4 phase triangles by three adiagonal triangulating sections. The complex formation reaction dominates the metathesis in the studied system. According to the proposed classification (Bergman A.G., Bukhalova G.A., Izv. Sektora fiz.-khim., analiza IONKh AN SSSR, 1949, 19, 33), this system is a zonal adiagonal one.

Card : 2/2 -56-

BERGMAN, A.G.

AUTHORS: Akopov, E.K. and Bergman, A.G. 574

TITLE: Fusion Diagram of the Quaternary System Li_2Cl_2 - Na_2Cl_2 - K_2Cl_2 - Li_2SO_4. (Diagramma Plavkosti Chetvernoy Sistemy Li_2Cl_2-Na_2Cl_2-K_2Cl_2- Li_2SO_4.)

PERIODICAL: "Zhurnal Neorganicheskoy Khimii" (Journal of Inorganic Chemistry, Vol.II, No.2, pp.383-394. (U.S.S.R.)- 1957

ABSTRACT: The phase diagram of the quaternary reciprocal system Li, Na, K, ‖ Cl, SO_4, is represented by a prism. The prism is divided by the stable section Na_2Cl_2 - K_2Cl_2 - Li_2SO_4, as previously shown by the authors[1], into a stable tetrahedron Li_2Cl_2 - Na_2Cl_2 - K_2Cl_2- Li_2SO_4 and a five point shape Na_2Cl_2 - K_2Cl_2 - Li_2SO_4 - Na_2SO_4 - K_2SO_4. The present work deals with the tetrahedron.

The fusion method was used for the investigation, the salts being melted in a platinum crucible with a platinum stirrer. A Pt - Rh | Pt - Au - Pd thermocouple was used.

The formation of the compound LiCl.NaCl, melting with decomposition at 575°C, was confirmed. The solid solutions of sodium and potassium chlorides inside the system separate into their components, the decomposition temperature for the system Li, Na,

Card 1/2

Fusion Diagram of the Quaternary System Li_2Cl_2 - Na_2Cl_2 - K_2Cl_2 - Li_2SO_4. (Cont.)

K ‖ Cl lying between 550 and 600°C, that for the system Na_2Cl_2 - Li_2SO_4 - K2Cl being about 620°C. Their stability was found to be influenced by the presence of a third component, lithium chloride decreasing the temperature, lithium sulphate increasing it. The following have been detected in the system: five main regions of crystallisation - the compound LiCl.NaCl, the α- and β- homeomorphic forms of LiCl, the α- and β- heteromorphic forms of Li_2SO_4, NaCl and KCl formed as a result of the decomposition of their solid solutions; of 19 ternary points 6 are non-variant and 8 are mono-variant. The tetrahedron is subdivided into two phase tetrahedra: LiCl.NaCl-Li_2Cl_2 - K_2Cl_2 - Li_2SO_4 with a quaternary eutectic and LiCl.NaCl-Na_2Cl_2 - K_2Cl_2 - $LiSO_4$ with a transition quaternary point.

There are 10 references all of them Russian.
Ref.1 which was cited in the text of the abstract is E.K.Akopov and A.G.Bergman, Izv. SFKhA Akad. Nauk. SSSR, Vol.25, p.263, 1954.

There are 16 figures and 4 tables.

The work was carried out at the Kuban Agricultural Institute and was received on 9 January, 1956.

BERGMAN, A.G

AUTHORS: Bergman, A.G. and Iliasov, I.I. 575

TITLE: Fusion Diagram for the Reciprocal System of Cadmium and Potassium Chlorides and Iodides. (Diagramma Plavkosti Vzaimnoy Sistemy iz Khloridov i Yodidov Kadmiya i Kaliya.)

PERIODICAL: "Zhurnal Neorganicheskoy Khimii" (Journal of Inorganic Chemistry Vol.II, No.2, pp.395-406. (U.S.S.R.) 1957

ABSTRACT: The system K, Cd ‖ Cl, I has clearly developed complex formation of the binary-system components and polymorphism. The crystallisation surface has a fairly complicated relief and consists of ten fields, meeting in six non-variant points.

Because of the decomposition of CdI_2 the investigation of the system reported was restricted to temperatures below 550°C. Carbon dioxide was continuously passed into the melt to minimise iodide decomposition.

Study of the liquidus diagram of the CdI_2 - K_2I_2 system showed the existence of the compound $CdI_2.2KI$ and $CdI_2.KI$, melting with decomposition at 223 and 272°C, respectively. The system $CdCl_2$ - CdI_2 has a eutectic at 360°C and 31% $CdCl_2$ and a homeomorphous transformation for $CdCl_2$ at 460°C. In the system $CdCl_2$ - K_2Cl_2 the compound $CdCl_2.4KCl$ was found, melting at 428°C without decomposition. Eleven different fields of crystallisation were found in the reciprocal system K, Cd ‖ Cl, I.

Card 1/2

Fusion Diagram for the Reciprocal System of Cadmium and Potassium Chlorides and Iodides. (Cont.)

The complex $CdCl_2.KCl$ (α, β) is stable and occupies an area of 14.72%. The compounds α and β $CdCl_2.4KCl$, $CdI_2.2KI$ and $CdI_2.KI$, which melt with decomposition, also retain their stability inside the system and have a common crystallisation curve with the complex $CdCl_2.KCl$ and component CdI_2. In the system complex-formation predominates over exchange reaction. The system is divided into four phase triangles by the three adiagonal triangulating sections: $CdCl_2.KCL - CdI_2$, $CdCl_2.KCl - CdI_2.2KI$ and $CdI_2.2KI - K_2CI_2$.

There are eight references, four of them Russian.

10 Figures, 7 Tables.

The work was carried out at the Engineering-Construction Institute, Rostov on Don.

Received 8 May, 1956.

Card 2/2

BERGMAN, A.G.

AUTHORS: Bergman, A. G. and Vartbaronov, O. R. 78-3-22/35

TITLE: Fusion Diagram for the Ternary System Consisting of the Chromate, Meta- and Tetraborates of Potassium. (Diagramma plavkosti troynoy sistemy iz khromata, meta- i tetraboratov kaliya.)

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1957, Vol.II, Nr.3, pp. 642-647. (USSR)

ABSTRACT: The present work represents the start of a study of the mutual reaction of the chromates, metaborates and tetraborates of potassium and sodium in melts in connection with the development of baths for the treatment of metals. The ternary system dealt with is the base of the prism representing the compositions $K^+, Na^+ \| CrO_4^{2-}, BO_2^-, B_4O_7^{2-}$; in it occur complex formation, the separation of components into two liquid phases and the formation of glasses. Visual-polythermal methods were used to show the existence of an incongruent compound for which the composition $2K_2O.3B_2O_3$ is proposed, which appears to be an inter-

Card 1/2

Fusion Diagram for the Ternary System Consisting of the Chromate, Meta- and Tetraborates of Potassium.

mediate type of compound between potassium metaborate and tetraborate, and which becomes congruently-melting within the system. The region in which separation into two layers occurs in the crystallisation field of K_2CrO_4 has been delineated. The system contains two ternary eutectic points, and shows simultaneous complex formation, separation into layers and glass formation. There are 6 figures, 4 tables and 4 references, all of which are Slavic.

ASSOCIATION: The Railway Transport Engineers Institute, Rostov on Don. (Rostovskiy n/D institut inzhenerov Zheleznodorozhnogo transporta.)

SUBMITTED: July 2, 1956.

AVAILABLE: Library of Congress.

Card 2/2

BERGMAN, A.G.

AUTHORS: Bergman, A. G. and Vartbaronov, O. R. 78-3-23/35

TITLE: Fusion Diagram for the System Consisting of Chromates and Tetraborates of Sodium and Potassium. (Diagramma plavkosti sistemy iz khromatov i tetraboratov natriya i kaliya.)

PERIODICAL: Zhurnal Neorganicheskoy Khimii, Vol.II, Nr.3, 1957, pp. 648-654. (USSR)

ABSTRACT: The system studied is the side face of the prism representing the composition K, $Na||CrO_4BO_2$, B_4O_7. The visual-polythermal method was used, with energetic stirring throughout experiments. The system was found to be reversibly-reciprocal with two immiscibility regions, and is the first representative of the type. The liquidus surface of the system consists of two crystallisation fields of a continuous series of solid solutions of chromates (89.1%), and tetraborates of potassium and sodium (10.9%). There is a minimum corresponding to 664°C and 54% $Na_2B_4O_7$, 10% K_2CrO_4, 36% $K_2B_4O_7$ on the curve of the co-crystallisation of

Card 1/2

78-3-23/35

Fusion Diagram for the System Consisting of Chromates and Tetraborates of Sodium and Potassium.

the continuous series of solid solutions. Two isolated regions of immiscibility have been found. There are 6 tables, 7 figures and 3 references, of which 1 is Slavic.

ASSOCIATION: The Railway Transport Engineers Institute, Rostov on Don. (Rostovskiy n/D institut inzhenerov Zheleznodorozhnogo transporta.)

SUBMITTED: July 12, 1956.

AVAILABLE: Library of Congress.

Card 2/2

BERGMAN, A. G.

ZAKHARCHENKO, V.A.; BERGMAN, A.G.

Mutual systems of fluorides and metavanadates of sodium and potassium. Zhur.neorg.khim. 2 no.4:877-882 Ap '57. (MIRA 10:8)

1.Novocherkasskiy politekhnicheskiy institut im. S.Ordzhonikidze, Kafedra obshchey i neorganicheskoy khimii.
(Systems (Chemistry))
(Alkali metal fluorides)
(Alkali metal vanadates)

BERGMAN, A.G.

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, B-8
Equilibria, Physical-Chemical Analysis, Phase Transitions.

Abs Jour : Referat Zhur - Khimiya, No 1, 1958, 407

Author : A.G. Bergman, M.V. Tokareva.
Inst :
Title : Interaction Between Silver Nitrate and Chlorides of Alkali Earth Metal in Absence of Solvent.

Orig Pub : Zh. neorgan. khimii, 1957, 2, No 5, 1086-1093

Abstract : The system of Ag and Ca chlorides (I and II) and of Ag and Ca nitrates (III and IV), as well as the diagonal sections III - $BaCl_2$ (V) and III - $SrCl_2$ (VI) were studied by the visual-polythermal method. The system is irreversibly reciprocal and singular. There is a shift of the metathetical reaction to the side of I - $Me(NO_3)_2$ (VII) in the earlier studied reciprocal systems of Ag, K and Li, and the most refractory component of the stable diagonal appears as the exchange product. The study of the diagonal

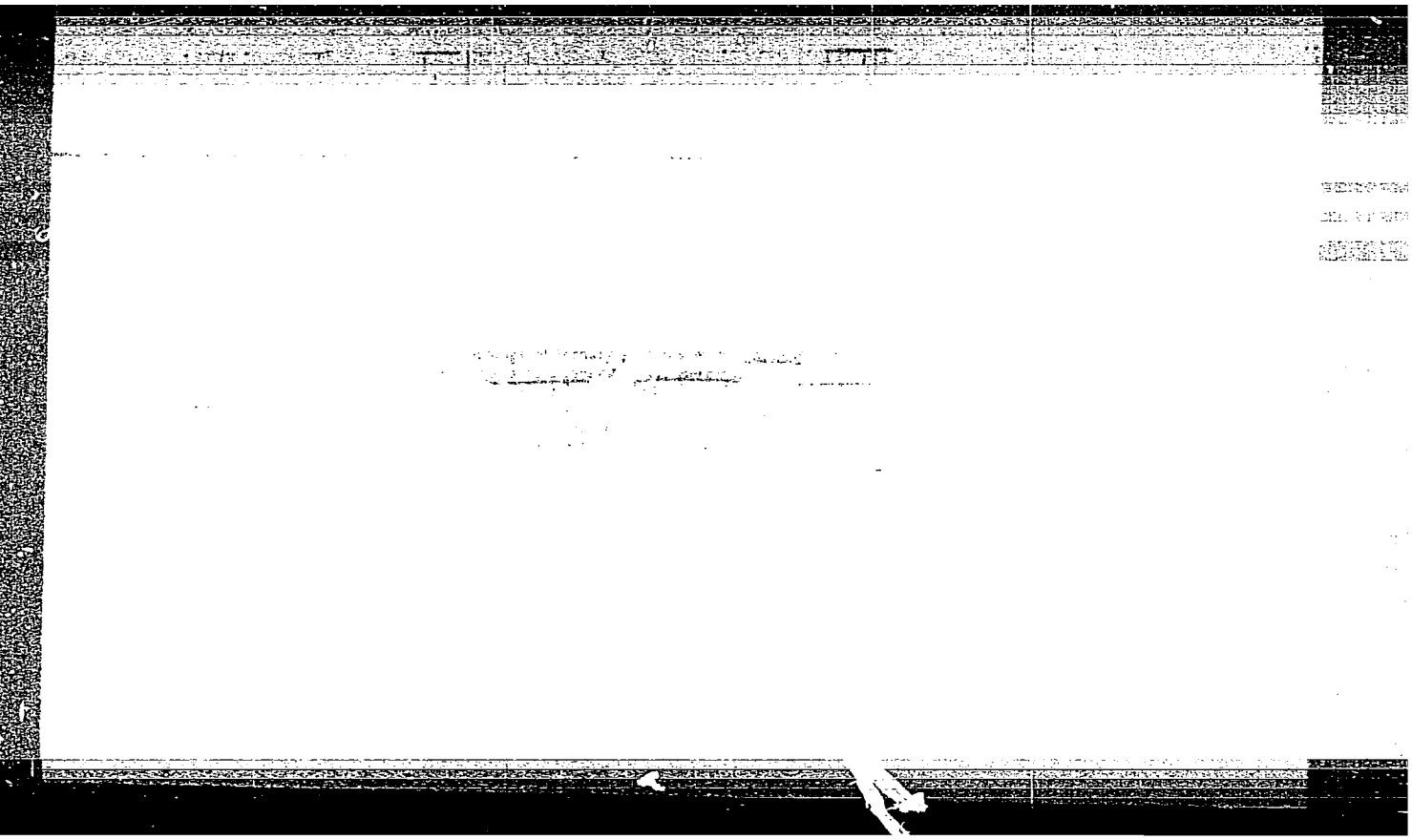
Card 1/2

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria, Physical-Chemical Analysis, Phase Transitions. B-8

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 407

sections III - V and III - VI showed that the reciprocal systems of these salts were also singular with a sharp shift of metathesis to the side of VII - I. The character of the system Ag, Sr // Cl, NO_3 is the most singular. Numerical data and graphs of states of the systems are given.

Card 2/2



APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000204910020-3"

Phase diagrams of the ternary systems of the fluorides, sulfates, and carbonates of sodium and potassium

BERGMAN, A.G.

IL'YASOV, I.I.; ROZHKOVSKAYA, L.V.; BERGMAN, A.G.

Fusibility diagram in a system of potassium and thallium bromides and chlorides. Zhur. neorg. khim. 2 no.8:1883-1887 Ag '57. (MIRA 11:3)

1. Rostovskiy-na-Donu inzhenerno-stroitel'nyy institut.
(Systems (Chemistry))

BERGMAN, A.G.; TOKAREVA, M.V.

Fusibility diagram in a system of barium and calcium nitrates and chlorides. Zhur. neorg. khim. 2 no.8:1888-1894 Ag '57. (MIRA 11:3)

1. Rostovskiy-na-Donu gosudarstvennyy universitet i Voroshilovgradskiy gosudarstvennyy pedagogicheskiy institut.
(Systems (Chemistry))

BERGMAN, A.G.

TOKAREVA, M.V.; BERGMAN, A.G.

Fusibility diagram in a system of potassium and strontium chlorides and nitrates. Zhur. neorg. khim. 2 no.8:1895-1906 Ag '57.
(MIRA 11:3)

1. Rostovskiy-na-Donu gosudarstvennyy universitet i Voroshilovgradskiy gosudarstvennyy pedagogicheskiy institut.
(Systems (Chemistry))

BERGMAN, A.G.

IL'YASOV, I.I.; FONARIDZHYAN, V.M.; BERGMAN, A.G.

Fusibility in the system of sodium and thallium bromides and chlorides. Zhur.neorg.khim. 2 no.9:2154-2158 S '57. (MIRA 10:12)
(Fusion) (Systems (Chemistry))

BERGMAN, A.G.

IL'YASOV, I.I.; BERGMAN, A.G.

Fusibility in the system of cadmium and lead chlorides and iodides. Zhur.neorg.khim. 2 no.9:2159-2167 S '57. (MIRA 10:12)
(Fusion) (Systems (Chemistry))

BERGMAN, A.G.

IL'YASOV, I.I.; SHCHEMELEVA, G.G.; BERGMAN, A.G.

Fusibility in the system of sodium and lead bromides and chlorides.
Zhur.neorg.khim. 2 no.9:2168-2173 S '57. (MIRA 10:12)
(Fusion) (Chemistry (Systems))

BERGMAN, A.G.

IL'YASOV, I.I.; ROZHKOVSKAYA, L.V.; BERGMAN, A.G.

Fusibility in the ternary mutual system of cadmium and lead chlorides and bromides. Zhur.neorg.khim. 2 no.9:2174-2177 S '57. (MIRA 10:12)

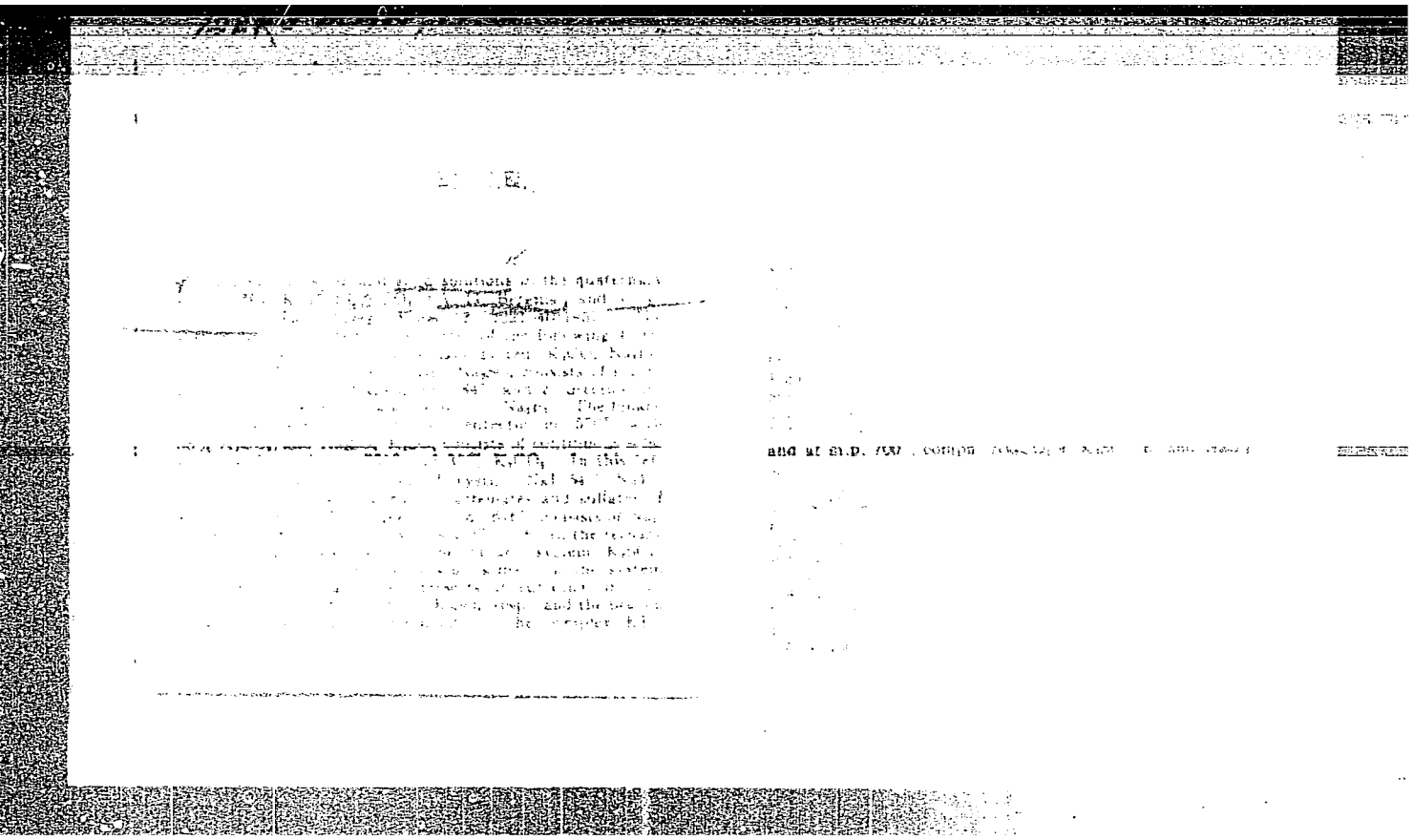
1.Rostovskiy-na-Donu Inshenerno-stroitel'nyy institut.
(Fusion) (Systems (Chemistry))

BERGMAN, A. G.

SULAYMANKULOV, K.; BERGMAN, A.G.

The polytherm of the ternary system water - urea - magnesium sulfate. Zhur.neorg.khim. 2 no.9:2226-2230 S '57. MIRA 10:12)

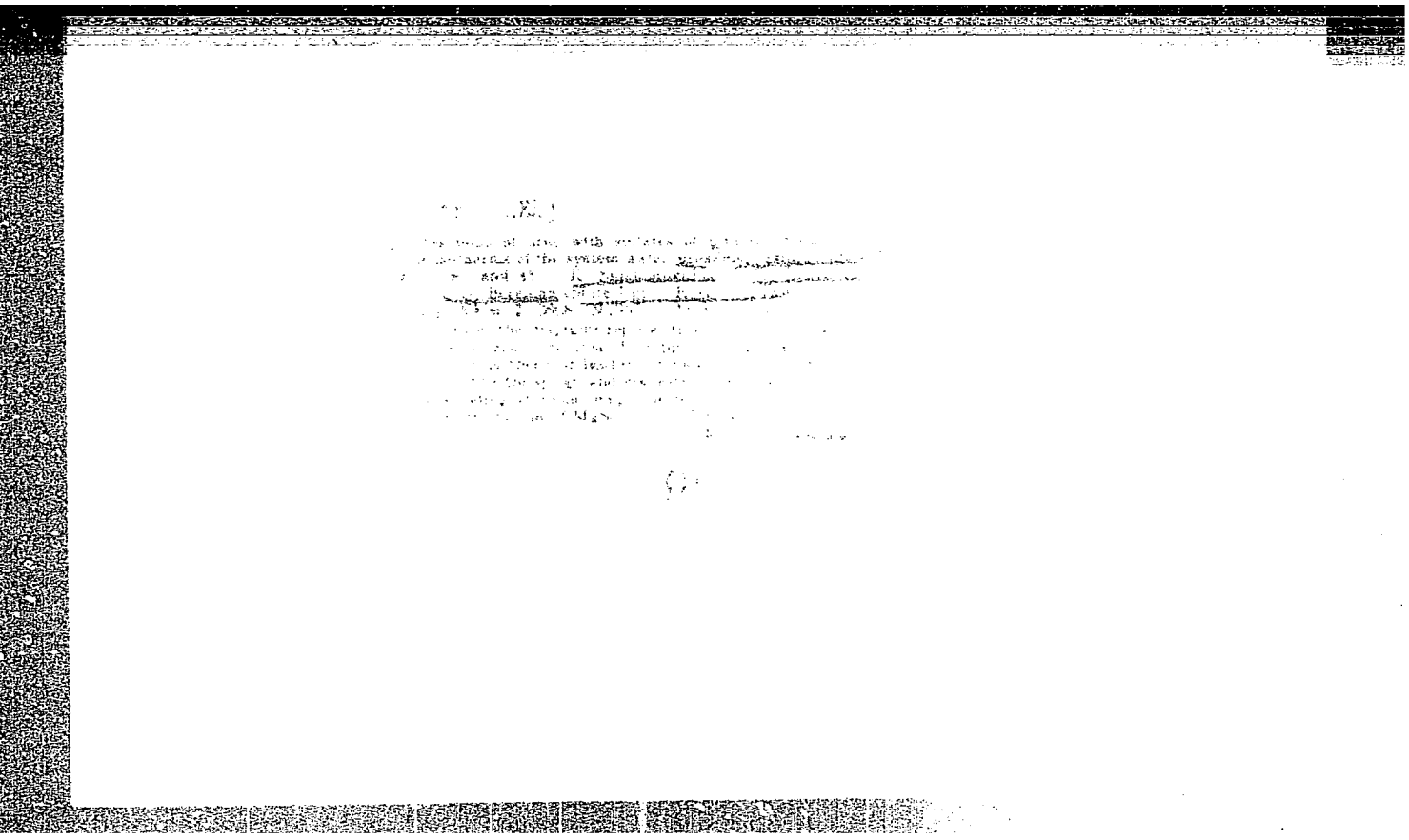
1.Rostovskiy-na-Donu gosudarstvennyy universitet.
(Magnesium) (Urea) (Sulfates)



BERGMAN, A.G.; VARTBARONOV, O.R.

The irreversibly reciprocal system of sodium and potassium chromates and metaborates. Zhur. neorg. khim. 2 no.11:2641-2648 N '57.
(MIRA 11:3)

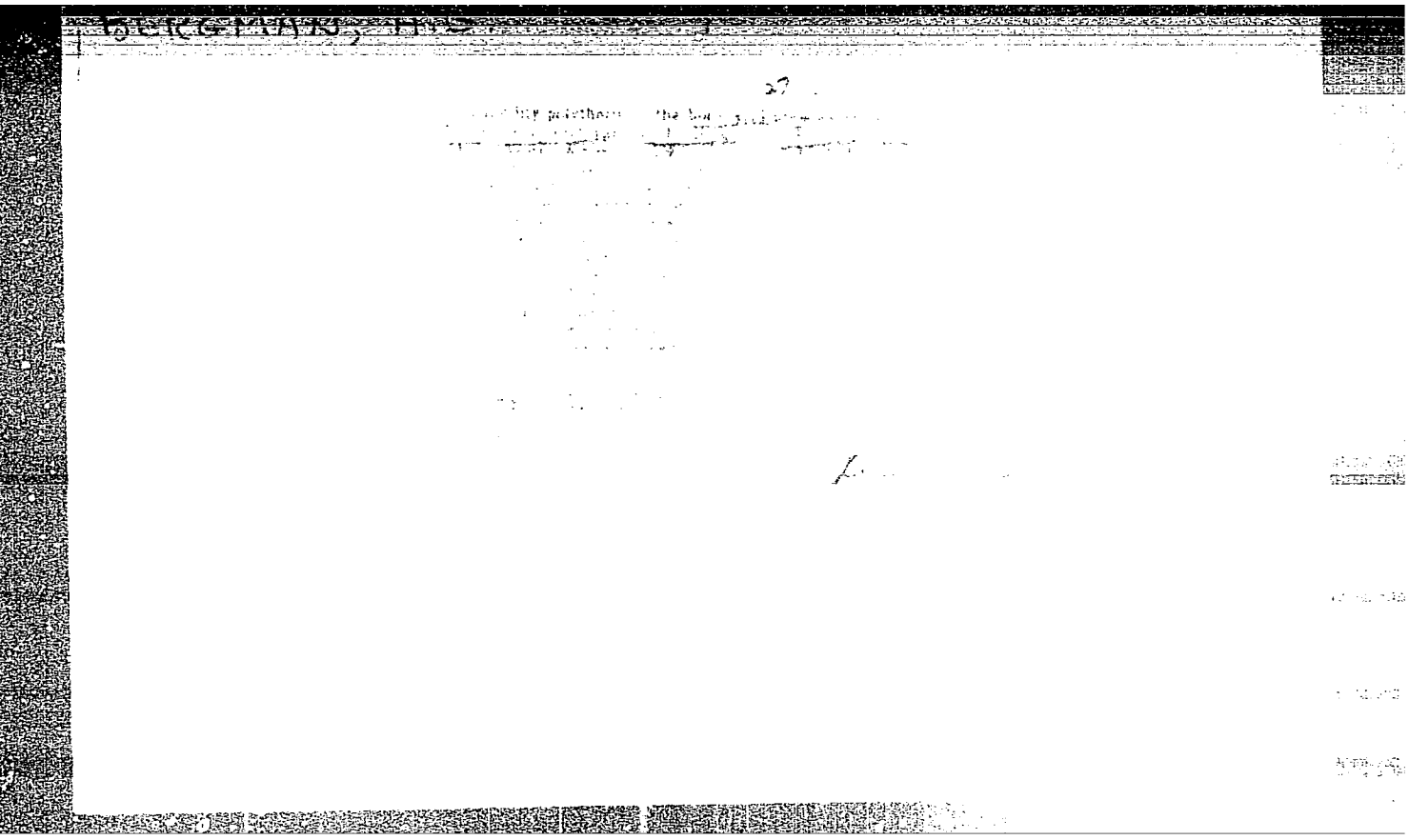
1.Rostovskiy-na-Donu institut inzhenerov zheleznodorozhnogo transporta.
(Alkali metal chromates) (Potassium borates)
(Sodium borate)



IL'YASOV, I.I.; BERGMAN, A.G.

Complex formation and exchange decomposition in the mutual system of thallium and lead chlorides and iodides. Zhur. neorg. khim. 2 no.12:2771-2781 D '57. (MIRA 11:2)

1. Rostovskiy-na-Donu inzhenerno-stroitel'nyy institut, Kafedra khimii.
(Thallium chloride) (Thallium iodides)
(Lead chlorides) (Lead iodides)



BERGMAN, A.G.; SULAYMANKULOV, K.

The polytherm of solubility of the system water — urea — zinc sulfate. Zhur. neorg. khim. 2 no.12:2813-2818 D '57. (MIRA 11:2)
(Urea) (Zinc sulfate) (Solubility)

BERGMAN, A.G.

ZAKHARCHENKO, M.A., dots., kand. khim. nauk; BERGMAN, A.G., prof., doktor khim. nauk.

The irreversibly mutual singular system with cleavage of silver and sodium chlorides and nitrates. Trudy NPI 27:3-17 '57. (MIRA 10:12)

1. Kafedra obshchey i neorganicheskoy khimii Novocherkasskogo politekhnicheskogo instituta.
(Systems (Chemistry))

BERGMAN, A.G.; ARESTENKO, A.P.

Thermal analysis of binary systems of benzidine with phenols and naphthols. Zhur. ob. khim. 27 no.4:867-870 Ap '57. (MLRA 10:8)

1. Kubanskiy sel'skokhozyaystvennyy institut i Rostovskiy-na-Donu gosudarstvennyy universitet.
(Benzidine) (Systems (Chemistry)) (Phenol) (Naphthol)

BERGMAN, A.G.; ARESTENKO, A.P.; KISLOVA, A.I.

The ternary system: benzidine--phenol--naphthalene. Zhur. ob. khim. 27 no.4:870-875 Ap '57. (MLRA 10:8)

1. Kubanskiy sel'skokhozyaystvennyy institut i Rostovskiy-na-Donu gosudarstvennyy universitet.
(Benzidine) (Systems (Chemistry)) (Phenol) (Naphthalene)

BERGMAN, A. G.

AUTHORS: Bergman, A. G., Sementsova, A. K. 78-2-20/43

TITLE: The Ternary Systems Na‖Cl, SO_4, CO_3 and K‖Cl, SO_4, CO_3 (Troynyye sistemy Na‖Cl, SO_4, CO_3 i K‖Cl, SO_4, CO_3)

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol.3, Nr 2, pp.383-392 (USSR)

ABSTRACT: The ternary systems Na‖Cl, SO_4, CO_3 and K‖Cl, SO_4, CO_3 were investigated. The fusion diagram of the system Na_2Cl_2-Na_2SO_4-Na_2CO_3 consists of two phases of crystallization: NaCl and $Na_2[SO_4CO_3]$. The fusion diagram of the system K_2Cl_2-K_2SO_4-K_2CO_3 consists of two crystallization phases: KCl and unlimited solid solutions $K_2[SO_4CO_3]$.
The obtained results show that the solid solution of Na_2SO_4-Na_2CO_3 does not change on addition of NaCl, only the melting temperature decreases down to 612°C. The solid solution of K_2SO_4-K_2CO_3 in the melt on addition of KCl remains unchanged to 622°C. The melting curve of the system K_2SO_4-K_2CO_3 lies near 891-1069°C and of the system Na_2SO_4-Na_2CO_3 near 850-884°C.

Card 1/2

78-2-20/43

The Ternary Systems Na‖Cl, SO_4, CO_3 and K‖Cl, SO_4, CO_3

The solid solutions of sodium carbonate and potassium sulfate remain undecomposed as far as 622°C. There are 10 figures, 6 tables, and 11 references, 8 of which are Slavic.

SUBMITTED: December 26, 1956

AVAILABLE: Library of Congress

Card 2/2

Bergmann, A. G.

AUTHORS: Bergmann, A. G., Sementsova, A. K. 78-2-21/43

TITLE: The Ternary Systems K_2Cl_2 - Na_2SO_4 - Na_2CO_3 and Na_2Cl_2 - - K_2SO_4 - K_2CO_3 (Troynyye sistemy K_2Cl_2 - Na_2SO_4 - Na_2CO_3 i Na_2Cl_2 - K_2SO_4 - K_2CO_3)

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol. 3, Nr 2, pp. 393-402 (USSR)

ABSTRACT: The ternary systems K_2Cl_2-Na_2SO_4-Na_2CO_3 and Na_2Cl_2-K_2SO_4-K_2CO_3 were investigated with the aid of the polythermal method. In the systems Na, K ‖ Cl, SO_4 solid solutions of sulfates probably with a composition of 2 Na_2SO_4.K_2SO_4 were continuously determined. In the system K_2Cl_2.Na_2SO_4 three phases were determined: 1. Na_2SO_4; the compound 2 Na_2SO_4.K_2SO_4; 3. KCl. In the ternary system K_2Cl_2-Na_2SO_4-Na_2CO_3 three compounds occur: KCl - 38,4%, 2 Na_2SO_4.K_2SO_4 - 4,4% and the solid solutions of $Na_2[SO_4.CO_3]$ - 28,4%. In the ternary system Na_2Cl_2-K_2SO_4-K_2CO_3 three compounds occur as well: NaCl - 14,6%, KCl - 28,4% (as an exchange product) and solid solutions of $K_2[SO_4.CO_3]$ -

Card 1/ 2

The Ternary Systems K_2Cl_2 - Na_2SO_4 - Na_2CO_3 and Na_2Cl_2 - K_2SO_4 - K_2CO_3 78-2-21/43

-57%. The results show that in the system Na, Cl, SO_4, CO_3, when sodium chloride is replaced by KCl, the diagram is more complicated, because the compound 2 Na_2SO_4.K_2SO_4 occurs. The crystallization temperature drops from 612° to 544° C. When K_2Cl_2 is replaced by Na_2Cl_2 in the system K_2Cl_2-K_2SO_4-KCO_3, the KCl-phase additionally also occurs. The crystallization temperature drops to 622° C. The investigations showed that the solid solutions which form in the ternary systems do not decompose. There are 12 figures, 4 tables, and 6 references, all of which are Slavic.

SUBMITTED: February 18, 1957

AVAILABLE: Library of Congress

Card 2/2

AUTHORS: Gladushchenko, V.A., Bergman, A.G. SOV/ 78-3-7-32/44

TITLE: The Exchange System Consisting of Fluorides and Sulfates of Sodium and Rubidium (Vzaimnaya sistema iz ftoridov i sul'fatov natriya i rubidiya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol. 3, Nr 7, pp 1650-1654 (USSR)

ABSTRACT: The exchange system Na, Rb || F, SO_4 was investigated by visual thermal methods. First of all the binary systems: 2 NaF-Na_2SO_4, Rb_2SO_4-Na_2SO_4, RbF-NaF and RbF-Rb_2SO_4 were investigated. The system 2 NaF-Na_2SO_4 contains the compound NaF.Na_2SO_4, the melting point of which is at 782°C. Solid solutions are formed in the system Rb_2SO_4-Na_2SO_4. In the system RbF-NaF the eutectic mixture is at approximately 33% NaF and 644° C. The system RbF-Rb_2SO_4 contains the compound RbF.Rb_2SO_4 the melting point of which is at 854° C. In the exchange system Na, Rb || F, SO_4 five crystallization ranges were found to exist: Two of them belong to the compounds NaF and RbF, two others to

Card 1/2

The Exchange System Consisting of Fluorides and Sulfates of Sodium and Rubidium SOV/78-3-7-32/44

the compounds $NaF \cdot Na_2SO_4$ and $RbF \cdot Rb_2SO_4$, and one to the solid solution $[Na \cdot Rb]_2SO_4$. The thermal effect of the exchange reaction in the system $Na, Rb \parallel F, SO_4$ amounts to 8,83 kcal/equ. The most stable section on the system investigated is the diagonal section $2\,NaF\text{-}Rb_2SO_4$. There are 6 figures, 2 tables, and 2 Soviet references.

ASSOCIATION: Novocherkasskiy politekhnicheskiy institut im. S. Ordzhonikidze (Novocherkassk Polytechnic Institute imeni S.Ordzhonikidze)

SUBMITTED: June 17, 1957

1. Sodium fluoride--Exchange reactions 2. Rubidium fluoride --Exchange reactions 3. Sodium sulfate--Exchange reactions 4. Rubidium sulfate--Exchange reactions

Card 2/2

AUTHORS: Bergman, A. G., Rubleva, V. V. SOV/78-3-8-30/48

TITLE: Quaternary Reciprocal System of Fluorides, Sulfates and Carbonates of Sodium and Potassium (Chetvernaya vzaimnaya sistema iz ftoridov, sul'fatov i karbonatov natriya i kaliya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol. 3, Nr 8, pp. 1901-1908 (USSR)

ABSTRACT: In the present paper the interaction in the complex system Na, K||F, SO_4, CO_3 was investigated. This investigation explained the compounds formed and the stability ranges as well as the decomposition of the solid solutions. Two sections of the system Na, K||F, CO_3 as well as the following systems were investigated to complete the crystallization ranges: $Na_2SO_4 - K_2SO_4$: Na_2SO_4 = (50% Na_2F_2 + 50% Na_2CO_3) - (50% K_2F_2 + 50% K_2CO_3) - K_2SO_4, Na_2SO_4 - (25% Na_2F_2 + 75% Na_2CO_3) - (25% K_2F_2 + 75% K_2CO_3) - K_2SO_4.

The section Na_2SO_4 - (50% Na_2F_2 + 50% Na_2CO_3) - (50% K_2F_2 +

Card 1/3

SOV/78-3-8-30/48

Quaternary Reciprocal System of Fluorides, Sulfates and Carbonates of Sodium and Potassium

ASSOCIATION: Rostovskiy-na-Donu gosudarstvennyy universitet (Rostov na Donu State University)

SUBMITTED: July 8, 1957

Card 3/3

Quaternary Reciprocal System of Fluorides, Sulfates and Carbonates of Sodium and Potassium

+ 50% K_2CO_3) - K_2SO_4 is characterized by the formation of the compound $NaF \cdot Na_2SO_4$ and the solid solutions of the potassium compounds $KF \cdot K_2SO_4$ and $KF \cdot K_2CO_3$. The section Na_2SO_4 - (25% Na_2F_2 + 75% Na_2CO_3) - (25% K_2F_2 + 75% K_2CO_3) - K_2SO_4 was also investigated and no compound was found. The results of the investigations of the fusion diagram of the quaternary reciprocal system Na, K||F, SO_4, CO_3 showed that the system consists of five crystallization ranges, as for instance: NaF, KF, solid solutions of the compounds $KF \cdot K_2SO_4$ and $KF_2K_2CO_3$, the compound $NaF \cdot Na_2SO_4$ as well as solid solutions of the sulfates and carbonates of potassium and sodium.
The fluorides do not make possible the formation of complex compounds of the sulfates of sodium and potassium, as they themselves form solid compounds with them.
There are 10 figures and 10 references, 10 of which are Soviet.

Card 2/3

AUTHORS: Tokareva, M. V., Bergman, A. G., Kayalova, S. S. SOV/78-3-8-31/48

TITLE: Reciprocal System of Nitrates and Chlorides of Sodium and Calcium (Vzaimnaya sistema iz nitratov i khloridov natriya i kal'tsiya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol. 3, Nr 8, pp. 1909-1913 (USSR)

ABSTRACT: Details were given of the experimental examinations of the reciprocal system of nitrates and chlorides of sodium and calcium in the presence of solvents. These examinations were performed by means of visual-polythermal methods. The system Na, Ca ‖ Cl, NO_3 is comparatively simple and the components forming the system do not react with each other by forming complex compounds and solid solutions. This system is analogous to the systems: Na, Sr ‖ Cl, NO_3 and Na, Ba ‖ Cl, NO_3. The results demonstrate that the reciprocal system Na, Ca ‖ Cl, NO_3 belongs to the most simple reciprocal systems. There are 9 figures, 3 tables, and 10 references, 10 of which

Card 1/2

Reciprocal System of Nitrates and Chlorides of Sodium and Calcium SOV/78-3-8-31/48

are Soviet.

ASSOCIATION: Rostovskiy-na-Donu gosudarstvennyy universitet i Luganskiy gosudarstvennyy pedagogicheskiy institut (State University Rostov na Donu and the State Pedagogical Institute, Luganesk)

SUBMITTED: July 21, 1957

Card 2/2

AUTHORS: Rustamov, P. G., Bergman, A. G. SOV/78-3-9-29/38

TITLE: Visual-Polythermal Analysis of Aqueous Reciprocal Systems of Sodium and Potassium Chlorides and Sulfates at Temperatures of 0, 5, 10 and 15°C (Vizual'no-politermicheskoye issledovaniye vodnoy vzaimnoy sistemy iz khloridov i sul'fatov natriya i kaliya pri 0; 5; 10 i 15°)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 9, pp 2184-2191 (USSR)

ABSTRACT: It is the purpose of the analysis under review to determine the solubility of the aqueous reciprocal systems of sodium and potassium chlorides and sulfates at 0, 5, 10 and 15°C. The investigation of the system Na, K | Cl, SO_4, H_2O was carried out by the visual-polythermal method. The isotherms at 0°C show that there are five regions of crystallization: NaCl, KCl, $Na_2SO_4 \cdot 10H_2O$, K_2SO_4 and $NaK_3(SO_4)_2$. Five regions of crystallization of potassium sulfate and Glauber's salt can be seen from the isotherms at 5°C. At 10°C, also five regions of crystallization can be seen from the isotherms; the separation of glaserite increases, whereas the region of Glauber's salt

Card 1/2

Visual-Polythermal Analysis of Aqueous Reciprocal Systems of Sodium and Potassium Chlorides and Sulfates at Temperatures of 0, 5, 10 and 15°C

decreases. At 15°C, there are again five isothermal regions of crystallization to be seen in the isotherms: NaCl, $Na_2SO_4 \cdot 10H_2O$, KCl, K_2SO_4 and glaserite. There is an increase in the region of glaserite at 15°C at the expense of Glauber's salt, but Glauber's salt still covers a comparatively large region. There are 8 figures, 4 tables, and 8 references, 4 of which are Soviet.

ASSOCIATION: Institut khimii Akademii nauk.Azerb.SSR (Institute of Chemistry, Academy of Sciences - Azerbaydzhan SSR); Rostovskiy gosudarstvennyy universitet (Rostov State University)

SUBMITTED: June 17, 1957

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000204910020-3"

AUTHORS: Bergman, A. G., Rustamov, P. G. SOV/78-3-9-30/38

TITLE: Isotherms at 20, 25 and 30°C in Aqueous Reciprocal Systems of Sodium and Potassium Chlorides and Sulfates (Izotermy 20, 25 i 30° vodnoy vzaimnoy sistemy iz khloridov i sul'fatov natriya i kaliya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 9, pp 2192-2199 (USSR)

ABSTRACT: The paper under review deals with the solubility in the system Na, K || Cl, SO_4+H_2O. The system was analyzed by the visual-polythermal method. An investigation was made of two diagonals and seven interior sections of the square of composition of the system Na, K || Cl, SO_4+ H_2O. With the results of the investigation of these sections the isotherms at 20, 25 and 30°C were represented graphically. At the isotherm at 20°C "tenardite" is formed. The region of Glauber's salt is reduced, however, the regions of crystallization of glaserite and "tenardite" increase. The isotherm at 25°C is characterized by a considerable decrease of the region of Glauber's salt and by an increase of the regions of glaserite and "tenardite". Regions of crystal-

Card 1/2

Isotherms at 20, 25 and 30°C in Aqueous Reciprocal Systems of Sodium and Potassium Chlorides and Sulfates

lization with a larger content of potassium were formed, that are characterized by lesser density and viscosity of the solution. In the presence of larger amounts of sodium, density and viscosity increase. Under the influence of sodium salt there is an increase in the hydration and association of the molecules. Six regions of crystallization can be seen in the solubility diagram: NaCl, KCl, $Na_2SO_4 \cdot 10H_2O$, Na_2SO_4, K_2SO_4 and $NaK_3(SO_4)_2$. There are 5 figures, 4 tables, and 8 references, 2 of which are Soviet.

ASSOCIATION: Institut khimii Akademii nauk Azerb.SSR (Institute of Chemistry, Academy of Sciences, Azerbaydzhan SSR); Rostovskiy gosudarstvennyy universitet (Rostov State University)

SUBMITTED: June 17, 1957

AUTHOR: Bergman, G. A.

SOV/78-3-10-32/35

TITLE: On the Problem of Equilibrium Vapor Pressure Over Germanium Dioxide (K voprosu o ravnovesnom davlenii para nad dvuokis'yu germaniya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 10, pp 2422-2424 (USSR)

ABSTRACT: The heat of sublimation of GeO_2 was determined by the equation $\Delta H^\circ_0 = T(\Delta\Phi - R \ln P)$. For the heat of sublimation the following equation was found $\Delta H'_0 = 84 \pm 2$ kcal./mol. When part of GeO_2 is dissociated, the heat of sublimation is $\Delta H^\circ_0 \Rightarrow 84$ kcal./mol. Gaseous GeO_2 is the main product resulting from sublimation. The equilibrium of the reaction $GeO_{2\ vapor} = GeO_{2\ vapor} + 1/2\ O_2$ (3) was examined. It was made clear by the analysis of the gaseous product of GeO_2 that the equilibrium is, under experimental conditions, on the side of the dissociation of GeO_2 to GeO_{vapor} and O_2. The equilibrium constant was calculated by the following equation:

Card 1/2

$$K_p = P_{GeO} \cdot P_{GeO_2}^{1/2} = 0,624\ P_{GeO_2}^{3/2}$$

The heat of formation of GeO_{vapor} $\Delta H^\circ_0 = -6 \pm 4$ kcal./mol.

This value is almost identical with those mentioned in the references. There are 0 figures, 1 tables, and 10 references, 3 of which are Soviet.

SUBMITTED: February 8, 1958

Card 2/2

AUTHORS: Bergman, A. G., Sementsova, A. K. SOV/78-3-12-22/36

TITLE: Inner Sections Through the Composition Prisms of the Quaternary Reciprocal System Na, K ‖ Cl, SO_4, CO_3 (Vnutrenniye secheniya cherez prizmu sostava chetvernoy vzaimnoy sistemy, Na, K ‖ Cl, SO_4, CO_3)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 12, pp 2740-2750 (USSR)

ABSTRACT: A quaternary reciprocal system was investigated which consisted of six salts: the chlorides, sulfates, and carbonates of sodium and potassium. The composition prism was described by the inner sections. The investigation was carried out using the visual-thermal method. The following sections were investigated:

1) Na_2Cl_2-(20% Na_2SO_4 + 80% Na_2CO_3)-(20% K_2SO_4 + 80% K_2CO_3)-K_2Cl_2.

On the basis of the investigation of the side and inner sections the projection of the area of crystallization and the composition square were constructed. The three areas in this construction are NaCl (28.3%), KCl (35.5%), and the continuous solid solution of the sulfate and carbonate of potassium (36.2%).

Card 1/3

Inner Sections Through the Composition Prisms of the Quaternary Reciprocal System Na, K ‖ Cl, SO_4, CO_3

The crystallization point of the three phases is at 554° (32.5% K_2Cl_2, 15% Na_2Cl_2, 10.5% Na_2SO_4 and 42% Na_2CO_3).

2) Na_2Cl_2-(50% Na_2SO_4 + 50% Na_2CO_3)-(50% K_2SO_4 + 50% K_2CO_3)-K_2Cl_2.

From the side and inner sections the projection of the surface area of crystallization was constructed. The area of crystallization consists of four phases: NaCl (25.9%), KCl (34.6 %), $K_2(SO_4CO_3)$ (23%), and $Na_2(SO_4CO_3)$ (16.5%).

3)(15% Na_2CO_3 + 85% Na_2SO_4)-Na_2Cl_2-K_2Cl_2-(15% K_2CO_3 + 85% K_2SO_4)

The area of crystallization consists of four phases: solid solutions of the carbonates and sulfates of sodium and potassium, (40.1%), the compounds $2Na_2SO_4 \cdot K_2SO_4$ (3.1%), NaCl (25.7%), KCl (31.1%).

4)(15% Na_2Cl_2 + 85% Na_2SO_4)-(15% Na_2Cl_2 + 85% Na_2CO_3) - (15% K_2Cl_2 + 85% K_2CO_3)-(15% K_2Cl_2 + 85% K_2SO_4).

This section was also investigated in order to determine the volume limits of the crystallization of the compound Na_2SO_4.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000204910020-3"

Inner Sections Through the Composition Prisms of the Quaternary Reciprocal System Na, K || Cl, SO_4, CO_3

K_2SO_4 and the division of the continuous ternary solid solutions of the sulfates and carbonates of sodium and potassium, as well as the boundaries of the solid solutions. The investigations show that the composition prisms of the ternary reciprocal system Na, K || Cl, SO_4, CO_3 consists of four crystalline phases: NaCl, KCl, $2Na_2SO_4 \cdot K_2SO_4$, and continuous solid solutions of sulfates and carbonates of sodium and potassium.
There are 14 figures and 7 Soviet references.

SUBMITTED: July 8, 1957

Card 3/3

BERGMAN, A.G.; VYRODOV, I.P.

Hardening of chloromagnesia cements. Zhur. prikl. khim. 31 no.1:19-25 Ja '58. (MIRA 11:4)
(Magnesia cement)
(Chemical structure)

GOLUBEVA, M.S.; BERGMAN, A.G.; GRIGOR'YEVA, Ye.A.

Ternary reciprocal systems consisting of: 1) potassium and sodium acetates and thiosulfates, and 2) thiocyanates and thiosulfates of the same metals. Uch.zap. RGU 41:145-154 '58. (MIRA 15:1)
(Systems (Chemistry))

VARTBARONOV, O.R., dotsent, kand. khim. nauk; BERGMAN, A.G., prof., doktor khim. nauk

External elements of the prism of the composition of the $Na,K // CrO_4,BO_2, B_4O_7$. Trudy RIIZHT no.28:156-168 '59. (MIRA 16:7)

(Systems (Chemistry)) (Salts)

VARTBARONOV, O.R., dotsent, kand. khim. nauk; BERGMAN, A.G., prof., doktor khim. nauk

Inner cross sections through the prism of the composition of the Na,K||CrO_4, BO_2, B_4O_7 system. Trudy RIIZHT no.28:169-180 '59. (MIRA 16:7)

(Systems (Chemistry)) (Salts)

5(4) SOV/78-4-1-22/48

AUTHORS: Bergman, A. G., Korobka, Ye. I.

TITLE: The Melting Diagram of the Ternary Reciprocal System of Sulphates and Molybdates of Lithium and Sodium (Diagramma plavkosti troynoy vzaimnoy sistemy iz sul'fatov i molibdatov litiya i natriya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 1, pp 110-116 (USSR)

ABSTRACT: The system Li, Na || SO_4, MoO_4 was investigated by a visual-thermal method. The binary systems Na_2MoO_4-Na_2SO_4, Na_2SO_4-Li_2SO_4, Na_2MoO_4-Li_2MoO_4 were investigated and partly corrected. The melting diagram of the ternary reciprocal system Li, Na || SO_4, MoO_4 consists of 18 ranges of crystallization, seven of them belonging to complex compounds. Ten triangular phases are formed in the system. The triangulation of the ternary reciprocal system and the triangular phases are shown in figure 5. In the triangular phases complex exchange and complex-forming reactions take place. The system

Card 1/2

SOV/78-4-1-22/48

The Melting Diagram of the Ternary Reciprocal System of Sulphates and Molybdates of Lithium and Sodium

Li, Na || SO_4, MoO_4, is characterized by numerous complex formations of the anionic and cationic type and by the formation of a heteroionic complex and polymorphy of all components. There are 6 figures, 2 tables, and 20 references, 11 of which are Soviet.

ASSOCIATION: Kubanskiy sel'skokhozyaystvennyy institut (Kuban' Agricultural Institute)

SUBMITTED: July 22, 1957

Card 2/2

5(4)
AUTHORS: Bergman, A. G., Rubleva, V. V. SOV/78-4-1-26/48

TITLE: The Adiagonal Reciprocal System From Fluorides and Sulfates of Sodium and Potassium (Adiagonal'naya vzaimnaya sistema iz ftoridov i sul'fatov natriya i kaliya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 1, pp 138-143 (USSR)

ABSTRACT: The system Na,K‖F, SO_4 which had been studied by S. M. Mukimov (Ref 1) was thoroughly investigated. The melt was examined by a visual-polythermic method. The crucible and the stirrer were made of platinum. NaF and KF were produced by treating Na_2CO_3 and K_2CO_3 with hydrofluoric acid. Na_2SO_4 and K_2SO_4 were purified by recrystallization repeated twice. Eleven inner sections were examined. The distribution of the inner sections and the projection of the phase diagram on the composition square of the system Na,K‖F, SO_4 are shown in figures 3 and 4. It was found that the crystallization zone of the compound $KF \cdot K_2SO_4$ extends across the diagonal section. The crystallization zone $NaF \cdot Na_2SO_4$ remains nearly unchanged.

Card 1/2

The Adiagonal Reciprocal System From Fluorides and Sulfates of Sodium and Potassium

SOV/78-4-1-26/48

The crystallization zones in the system are as follows: NaF - 29.4%, KF - 10.6%, $KF.K_2SO_4$ - 22.1%, $NaF.Na_2SO_4$ - 7.4%, $[Na,K]_2SO_4$ - 30.5% (percentage of the composition square). The system has the following triangulating sections: Na_2F_2 - $K_2F_2.2K_2SO_4$, Na_2F_2 - K_2SO_4 and $Na_2F_2.2Na_2SO_4$ - K_2SO_4 which divide the square into four triangular phases. The section Na_2F_2 - $K_2F_2.2K_2SO_4$ shows that the system of fluorides and sulfates of sodium and potassium is an adiagonal reciprocal system. There are 4 figures, 3 tables, and 9 references, 8 of which are Soviet.

ASSOCIATION: Rostovskiy-na-Donu gosudarstvennyy universitet (Rostov-na-Donu State University)

SUBMITTED: July 8, 1957

Card 2/2

5(4)

AUTHORS: Sementsova, A. K., Yevdokimova, K. A. SOV/78-4-1-27/48
Bergman, A.G.

TITLE: Ternary Reciprocal System From Sulfates and Carbonates of Sodium and Potassium (Troynaya vzaimnaya sistema iz sul'fatov i karbonatov natriya i kaliya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 1, pp 144-147 (USSR)

ABSTRACT: The ternary system $Na,K \| SO_4,CO_3$ was investigated by a visual-thermic method. The binary systems Na_2SO_4-Na_2CO_3, Na_2CO_3-K_2CO_3 and K_2SO_4-Na_2SO_4 were examined and completed, as well as the systems K_2SO_4-Na_2CO_3 and Na_2SO_4-K_2CO_3. The melting diagram of the ternary system consists of a uniform crystallization zone of uninterrupted solid solutions; $Na,K \| SO_4,CO_3$ is a reciprocal system with uninterrupted solid solutions appearing on all four sides which decompose into two constant solid solutions towards the centre of the system: $Na_2[SO_4, CO_3]$ and $K_2[SO_4, CO_3]$. Figure 2 shows the projection

Card 1/2

of the phase diagram of the reciprocal system and the distribution of the inner sections in this system. There are 3 figures, 1 table, and 8 references, 7 of which are Soviet.

SUBMITTED: July 8, 1957

SOV/78-4-1-34/48

5(2), 5(4)

AUTHORS: Bergman, A. G., Kuznetsova, A. I.

TITLE: The Solubility Diagram of the Ternary System H_2O-KCl-$CaCl_2$ From the Temperature of Complete Solidification to 300° (Diagramma rastvorimosti troynoy sistemy H_2O-KCl-$CaCl_2$ ot temperatury polnogo zamerzaniya do 300°)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 1, pp 194-204 (USSR)

ABSTRACT: The reciprocal solubility of potassium and calcium chloride at lower and higher temperatures was investigated by a visual-polythermic method. At first the binary systems $CaCl_2$-H_2O and KCl-H_2O were examined and completed. Twelve sections were examined for the plotting of the solubility diagrams. Ten crystallization zones may be seen in the diagram: Ice, KCl, KCl.nH_2O, $CaCl_2 \cdot 6H_2O$, $CaCl_2 \cdot 4H_2O$, $CaCl_2 \cdot 2H_2O$, $CaCl_2 \cdot H_2O$, $CaCl_2$, α- and β-KCl.$CaCl_2$. The modification α-KCl.$CaCl_2$ exists from +37.8 to +196°. At a higher temperature the compound changes to modification β-KCl.$CaCl_2$. On the basis of the results obtained

Card 1/2

SOV/78-4-1-34/48

The Solubility Diagram of the Ternary System H_2O-KCl-$CaCl_2$ From the Temperature of Complete Solidification to 300°

the phase diagram of the ternary system H_2O-KCl-$CaCl_2$ was plotted from the solidification point -50.5° to the melting points of the anhydrous components. In the system 8 triple non-variant points occur whose characteristics are shown in table 4 together with data concerning the solid phases. There are 7 figures, 5 tables, and 25 references, 16 of which are Soviet.

ASSOCIATION: Institut khimii Akademii nauk TadzhSSR i Rostovskiy gosudarstvennyy universitet (Institute of Chemistry of the Academy of Sciences Tadzhikskaya SSR and Rostov State University)

SUBMITTED: July 8, 1957

Card 2/2

5(4)

SOV/78-4-4-33/44

AUTHORS: Il'yasov, I. I., Shchemeleva, G. G., Bergman, A. G.

TITLE: The Behavior of the Ternary System of Sodium, Cadmium and Lead Bromides in the Melting Process (Plavkost' troynoy sistemy iz bromidov natriya, kadmiya i svintsa)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 4, pp 906-908 (USSR)

ABSTRACT: The system Na, Cd, Pb ‖ Br was investigated by a visual polythermal method. The binary systems Na_2Br_2-$PbBr_2$, Na_2Br_2-$CdBr_2$ and $CdBr_2$-$PbBr_2$ were checked and completed. Six internal sections of the ternary system were investigated; the results are contained in figure 1 and table 2. The melting diagram of this system consists of three main crystallization ranges. A range with α- and β-homeomorphous differences appears within the range of Na_2Br_2. In the system Na_2Br_2-$PbBr_2$ a eutectic occurs at 324° with 9.7% Na_2Br_2. The transition point of the α- and β-homeomorphous form is located at 380° with 17% Na_2Br_2. The system $CdBr_2$-$PbBr_2$ forms a eutectic at 340° with

Card 1/2

The Behavior of the Ternary System of Sodium, Cadmium and Lead Bromides in the Melting Process

15% $CdBr_2$. The melting points within the binary systems $PbBr_2$-Na_2Br_2 and $PbBr_2$-$CdBr_2$ are given in a table. There are 2 figures, 2 tables, and 8 references, 7 of which are Soviet.

SUBMITTED: December 26, 1957

Card 2/2

5(4) SOV/78-4-4-35/44

AUTHORS: Il'yasov, I. I., Bergman, A. G.

TITLE: Complex Formation in the Reciprocal System of Chlorides and Iodides of Cadmium and Thallium (Kompleksoobrazovaniye po vzaimnoy sisteme iz khloridov i yodidov kadmiya i talliya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 4, pp 913-919 (USSR)

ABSTRACT: The reciprocal system Tl, Cd || Cl, J was investigated by a visual polythermal method. First, the binary systems $CdCl_2$-CdJ_2, CdJ_2-Tl_2J_2, $CdCl_2$-Tl_2Cl_2 and Tl_2J_2-Tl_2Cl_2 were investigated. In the system $CdCl_2$-Tl_2Cl_2 the compound $CdCl_2$.TlCl with the melting point 430° is formed. The unstable diagonal sections Tl_2Cl_2-CdJ_2 and $CdCl_2$-Tl_2J_2 were investigated; the results are given in figure 2. The triangulating nondiagonal sections from the top of the complex $CdCl_2$.TlCl are given in figure 3. The section $CdCl_2$.TlCl-Tl_2J_2 consists of three branches; α- and β-$CdCl_2$.TlCl and Tl_2J_2. The section $CdCl_2$.TlCl-CdJ_2.4TlJ is

Card 1/3

Complex Formation in the Reciprocal System of Chlorides and Iodides of Cadmium and Thallium

characterized by polymorphous transformation of the branch $CdCl_2$.TlCl at 372° and 21.5% (CdJ_2.4TlJ). The following branches were found in the section $CdCl_2$.TlCl-CdJ_2: α-$CdCl_2$.TlCl, β-$CdCl_2$.TlCl, $CdCl_2$ and CdJ_2, which intersect at 372° and 21.5% CdJ_2, 330° and 33% CdJ_2, and 320° and 69% CdJ_2. Apart from the diagonal and triangulating sections, thirteen internal sections were investigated, the melting diagrams of which are given in figures 4, 5 and 6. The crystallization surface of the system covers six crystallization ranges. The nature of the melting diagram shows that complex formation prevails in the system Tl, Cd ‖ Cl, J. A characterization of the binary system CdJ_2-Tl_2J_2 and of the diagonal sections Tl_2Cl_2-CdJ_2 and $CdCl_2$-Tl_2J_2 by the melting points is given in a table; the three eutectic points and the point of transition of the system Cd, Tl ‖ Cl, J are contained in another table. There are 6 figures, 2 tables, and 12 references, 8 of which are Soviet.

Card 2/3

SOV/78-4-4-35/44

Complex Formation in the Reciprocal System of Chlorides and Iodides of Cadmium and Thallium

ASSOCIATION: Rostovskiy-na-Donu inzhenerno-stroitel'nyy institut (Rostov-na-Donu Institute of Construction Engineering)

SUBMITTED: January 15, 1958

Card 3/3

5(4) SOV/78-4-4-37/44

AUTHORS: Bergman, A. G., Sulaymankulov, K.

TITLE: The Equilibrium in the Systems Water - Urea - Cobalt-Sulphate and Water - Urea - Copper-Sulphate (Ravnovesiye v sistemakh: voda-mochevina-sul'fat kobal'ta i voda-mochevina-sul'fat medi)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 4, pp 929-935 (USSR)

ABSTRACT: In the system $CoSO_4$-$CO(NH_2)_2$-H_2O the following isothermal lines were investigated: solubility, specific weight and viscosity. The results are given in figures 1 and 2. The complexes $CoSO_4 \cdot 6CO(NH_2)_2$ and $CoSO_4 \cdot 2CO(NH_2)_2 \cdot 4H_2O$ are formed between cobalt sulphate and urea. Instead of an H_2O molecule, the urea molecule enters the inner sphere of the complex as an addendum. The authors investigated the polythermal line of the system water - urea - copper sulphate from -18.4 to +25° by a visual-polythermal method. For the purpose of investigating the crystallization surface of this system eight internal sections were made which are given in figure 3 and table 2. The complex formed in the

Card 1/3

The Equilibrium in the Systems Water - Urea - Cobalt-Sulphate and Water - Urea - Copper-Sulphate

liquid phase is not separated as a solid phase. The isothermal lines of the solubility, specific weight and viscosity of the system $CuSO_4 \cdot CO(NH_2)_2 \cdot H_2O$ were investigated at 30°; the results are given in figure 3. The authors discussed the results of the investigation of complex formation in the system water - urea - sulphate of magnesium, zinc, cobalt and copper. The compounds produced with urea have the coordination numbers 4 and 6, urea entering the inner complex sphere. A table contains the measurement results of the isothermal lines of the system $CoSO_4 \cdot CO(NH_2)_2 \cdot H_2O$ as well as the compositions of the solid phase; another table contains similar data on the system $CuSO_4 \cdot CO(NH_2)_2 \cdot H_2O$. There are 6 figures, 3 tables, and 8 references, 5 of which are Soviet.

ASSOCIATION: Rostovskiy-na-Donu gosudarstvennyy universitet (Rostov-na-Donu State University) Institut khimii Akademii nauk Kirg.SSR (Chemical Institute of the Academy of Sciences of the Kirgizskaya SSR)

5(4) SOV/78-4-5-33/46

AUTHORS: Akopov, Ye. K., Bergman, A. G.

TITLE: The Melting Diagram of the Three-component System Consisting of Sulphates of Lithium, Sodium, and Potassium (Diagramma plavkosti troynoy sistemy iz sul'fatov litiya, natriya i kaliya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 5, pp 1146-1152 (USSR)

ABSTRACT: The melting diagram of the three-component system consisting of sulphates of lithium, sodium, and potassium was investigated by means of the visual-polythermal method. 32 sections, the intersection points, and the melting temperatures were investigated and the results obtained are shown by table 1. The internal sections of the system are represented in figures 1 and 2. The sequence of the internal sections in the system Li, Na, $K \parallel SO_4$ are shown by figure 3. Figure 4 shows the complete projection of the melting diagrams, and figure 5 the projection of the three-component system of the outer side of the triangle $LiSO_4$ through the vertex K_2SO_4. The crystallization surface of this system consists of 19 regions

Card 1/2

SOV/78-4-5-33/46

The Melting Diagram of the Three-component System Consisting of Sulphates of Lithium, Sodium, and Potassium

of solid solutions of sodium- and potassium sulphate, which partly decomposes into the components K_2SO_4 and Na_2SO_4, of two crystallization regions of the α- and β-modification of Li_2SO_4, of four crystallization regions of the double bonds $Li_2SO_4 \cdot Na_2SO_4$, $Li_2SO_4 \cdot 2Na_2SO_4$, $2Li_2SO_4 \cdot K_2SO_4$ and $Li_2SO_4 \cdot K_2SO_4$. The compound $Li_2SO_4 \cdot K_2SO_4$ decomposes into the α- and β-modification. The results obtained show that complicated interactions between sulphates and alkali metals occur in the system. There are 5 figures, 2 tables, and 2 Soviet references.

ASSOCIATION: Kubanskiy sel'skokhozyaystvennyy institut (Kuban' Agricultural Institute)

SUBMITTED: February 21, 1958

Card 2/2

5(2) SOV/78-4-7-32/44

AUTHORS: Akopov, Ye. K., Bergman, A. G.

TITLE: On the Decay of Solid Solutions in the Combined System of Chlorides and Sulfates of Sodium and Potassium (O raspade tverdykh rastvorov vo vzaimnoy sisteme iz khloridov i sul'fatov natriya i kaliya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 7, pp 1653-1656 (USSR)

ABSTRACT: The ternary systems of Li-, Na- and potassium sulfate and the quaternary systems Li, Na, K ‖ Cl, SO_4 were investigated in an earlier paper (Ref 1). It was found that the decay of the continuous solid solutions of sodium- and potassium sulfate is accompanied by the formation of three independent phases of double salts, which are formed if the temperature drops to 686°-736°. The present paper supplies data concerning newly investigated cross sections and a final diagram of the entire system. Figure 1 shows the melting curve in the diagonal section $K_2Cl_2 - Na_2SO_4$. 20 internal cross sections, their cross sections and melting temperatures were investigated (Figs 1,2). Table 1 gives the most important results, and figure 3 the

Card 1/2

On the Decay of Solid Solutions in the Combined System of Chlorides and Sulfates of Sodium and Potassium

position of the internal cross sections. A remarkable fact is the occurrence of independent internal phases I, II, and III by the decay of the solid solutions. The composition of these internal phases has as yet not been found. Figure 4 shows the projection of the melting diagram of the system Na, K || Cl, SO_4 constructed on the basis of the data obtained. There are 4 figures, 2 tables, and 3 references, 2 of which are Soviet.

ASSOCIATION: Kubanskiy sel'skokhozyaystvennyy institut (Kuban' Agricultural Institute)

SUBMITTED: April 4, 1958

5(2) SOV/78-4-8-29/43

AUTHORS: Bergman, A. G., Korobka, Ye. I.

TITLE: The Fusibility in the Ternary System of Sulphates and Molybdates of Sodium and Potassium (Plavkost' v troynoy sisteme iz sul'fatov i molibdatov natriya i kaliya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 8, pp 1885-1892 (USSR)

ABSTRACT: The authors continue their investigation of sulphate and molybdate systems of the alkali metals (Refs 1,2) with the system mentioned in the title. The mutual system investigated is very complicated. It forms numerous different complexes besides continuous series of solid ternary solutions which decompose in different way. The melting diagram of the system Na, K || SO_4, MoO_4 consists of 10 crystallization fields of complex compounds, a field of the component Na_2MoO_4 and a field of continuous solid solutions of the three other components. The complex compounds strongly differ: 4 binary complexes are formed, moreover, in the decomposition of the solid solution of sodium and potassium sulphate three inner binary and also

Card 1/2

The Fusibility in the Ternary System of Sulphates and Molybdates of Sodium and Potassium

one ternary hetero-ion complex are formed. The 29 curves of the joint crystallization intersect in 17 ternary points, 2 of which are eutectic. The crystallization scheme consists of 4 closed cycles. The temperature decrease is unimportant; the melting point of the eutectic point E_8 at 618° is only by 66° lower than the melting temperature of Na_2MoO_4, the most easily fusible component. This slight temperature decrease is explained by the wide range of the solid solutions. There are 7 figures, 2 tables, and 25 references, 19 of which are Soviet.

ASSOCIATION: Kubanskiy sel'skokhozyaystvennyy institut (Kuban' Institute of Agriculture)

SUBMITTED: March 29, 1958

5(2)

SOV/78-4-8-30/43

AUTHORS: Kislova, A. I., Bergman, A. G.

TITLE: The Fusibility in the System of Wolframates and Fluorides of Lithium and Potassium (Plavkost' v sisteme iz vol'framatov i ftoridov litiya i kaliya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 8, pp 1893-1898 (USSR)

ABSTRACT: In the development of the chemistry of the melted salts the influence exercised by the dissolving agent on the durability of the complex compounds becomes more distinct. In the mutual system not only the stability of the complexes of binary side systems but also the heterogeneous complexes are influenced. The system mentioned in the title belongs to the irreversible mutual systems with two subordinated adiagonal cross sections. The congruently melting side compound $KF \cdot K_2WO_3$ becomes incongruent within the system. The system Li, K || F, WO_4 behaves in similar way as the system Li, K || F, SO_4. The cross sections of the system are shown in diagrams (Figs 1-4) and the correspond-

Card 1/2

The Fusibility in the System of Wolframates and Fluorides of Lithium and Potassium

ing physical data are given in tables 1 and 2. Table 3 shows the composition of the equilibrium phases. There are 5 figures, 2 tables, and 6 Soviet references.

ASSOCIATION: Kubanskiy sel'skokhozyaystvennyy institut (Kuban' Institute of Agriculture)

SUBMITTED: April 29, 1958

5(2)

AUTHORS: Bergman, A. G., Korobka, Ye. I. SOV/78-4-9-24/44

TITLE: The Fusibility in the Ternary System of Molybdates of Lithium, Sodium, and Potassium

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 9, pp 2072-2076 (USSR)

ABSTRACT: A comparison of the system mentioned in the title with the systems of alkali metals and other anions exhibits an increasing complexity of the character of the systems as the radius of the anion increases. On the basis of 25 interior cross sections (Table 1, Figs 1-4) the crystallization surface was drawn in the system Li,Na,K $\parallel MoO_4$. It contains 5 ranges of binary complex compounds, one interior range of ternary molybdate, and three ranges of the components. Transformations occur in the ranges of Li_2MoO_4, Na_2MoO_4 and $Li_2MoO_4 \cdot K_2MoO_4$. The twenty curves of joint crystallization converge in 12 tertiary points, two of which are eutectic. By means of triangulation 8 phase triangles were obtained (Fig 5) whose nonvariant points are listed in table 2. The crystallization pattern (Fig 6) exhibits a closed cycle of

Card 1/2

the ternary molybdate and two ramifications. Accordingly, the system Li,Na,K || MoO_4 belongs to the ternary belt systems with an inner ternary compound and binary complex compounds on all sides. There are 6 figures, 2 tables, and 14 references, 12 of which are Soviet.

ASSOCIATION: Kubanskiy sel'skokhozyaystvennyy institut (Kuban' Agriculture Institute)

SUBMITTED: April 14, 1958

5(2)
AUTHORS: Il'yasov, I. I., Bergman, A. G. SOV/78-4-9-26/44

TITLE: The Fusibility in the Ternary System of Iodides of Sodium, Potassium, and Lead

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 9, pp 2083-20[illegible] (USSR)

ABSTRACT: After a short characterization of the binary systems Na_2J_2 - K_2J_2, Na_2J_2 - PbJ_2, and K_2J_2 - PbJ_2 (Fig 1) a report is made on the investigation of the ternary system mentioned in the title (Fig 2, Tables 1, 2). Within this system an interior field can be clearly distinguished which borders on all the other components and the double compound $KJPbJ_2$, melts incongruently, and has approximately the following composition: KJ.2NaJ.2PbJ_2. It was found that the solid solutions of NaJ and KJ within this system decompose already below 500°. The four nonvariant points are given in table 3. There are 4 figures, 3 tables, and 7 Soviet references.

SUBMITTED: April 30, 1958
Card 1/1

5(2)
AUTHORS: Gladushchenko, V. A., Bergman, A. G. SOV/78-4-9-27/44

TITLE: The Melting-point Diagram in the System of Chlorides and Sulfates of Silver and Lead

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 9, pp 2087-2090 (USSR)

ABSTRACT: After a short characterization of the binary systems $PbCl_2 - PbSO_4$, $PbCl_2 - Ag_2Cl_2$, $Ag_2Cl_2 - Ag_2SO_4$, and $Ag_2SO_4 - PbSO_4$ (Table 1) a report is made on the investigation of 12 interior sections of the system mentioned in the title. The location of these sections is given in figures 1, 2. On the basis of the diagrams of the marginal zones, the diagonal and interior sections, the melting-point diagram was plotted (Fig 3). Above 900° it is schematical only and was found by extrapolation, since at high temperatures the vapor pressures of $PbCl_2$ was felt to impede the investigation. The diagram suggests a simple irreversible system of the singular type, without any formation of complexes or solid solutions, while in the system K,Ca ‖ F,Cl, which in other

Card 1/2

respects proved very similar to the one discussed here, there were complex compounds to be found, according to I. E. Krauze and A. G. Bergman (Ref 6). There are 3 figures, 1 table, and 6 references, 4 of which are Soviet.

ASSOCIATION: Novocherkasskiy ordena Trudovogo Krasnogo znameni politekhnicheskiy institut im. S. Ordzhonikidze (Novocherkassk Order of the Labor Red Banner Polytechnic Institute imeni S. Ordzhonikidze)

SUBMITTED: May 10, 1958

5(2) SOV/78-4-9-25/44

AUTHORS: Bostandzhiyan, A. K., Il'yasov, I. I., Bergman, A. G.

TITLE: The Fusibility in a System of Chlorides and Bromides of Potassium and Lead

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 9, pp 2079-20[illegible] (USSR)

ABSTRACT: Before the combined system mentioned in the title is dealt with the melting curves of the binary systems K_2Cl_2 - $PbCl_2$, K_2Br_2 - $PbBr_2$ (in accordance with the data given by S. D. Gromakov, reference 2), K_2Cl_2 - K_2Br_2 and $PbCl_2$ - $PbBr_2$ (in contrast with the data given by L. I. Favorskiy, reference 5) are given in figure 1. In the combined system two diagonal and four interior sections were investigated (Table 1, Figs 2-4). In the four crystallization ranges $K[Cl,Br]$, $2K[Cl,Br].Pb[Cl,Br]_2$, $K[Cl,Br].2Pb[Cl,Br]_2$ and $Pb[Cl,Br]_2$ are formed. The system under examination belongs to the group of mutual systems with

Card 1/2

complex formations of the belt type in which all components and compounds of the sides opposite one another form stable continuous solid solutions with each other. There are 4 figures, 1 table, and 9 references, 7 of which are Soviet.

SUBMITTED: April 30, 1958

05876
SOV/78-4-11-29/50

5(2)

AUTHORS: Bostandzhiyan, A. K., Bergman, A. G.

TITLE: The Melting Diagram of the System of Sodium-, Cadmium- and Thallium Chlorides

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 11, pp 2564 - 2566 (USSR)

ABSTRACT: The system mentioned in the title was investigated in 14 sections (Tables 1,2, Fig 1). The crystallization surface consists of five crystallization fields of the components and complexes meeting in three nonvariant points (Table 3, Figs 1,2). The section leading to the Na_2Cl_2-corner with 67.7% $CdCl_2$+33.3% Tl_2Cl_2 corresponds to the binary stable system $TlCl.CdCl_2$-NaCl with the eutectic point at 384° and 16.5% Na_2Cl_2. A characteristic feature is the stable equilibrium of the systems $2NaCl.CdCl_2$ and $TlCl.CdCl_2$ with $CdCl_2$ in the ternary point E_1 (358°). Some brief data are given on the three binary systems which are components of the ternary system. The data by A. P. Palkin (Ref 5) on a eutectic in the system NaCl - TlCl at 7% NaCl and 409° were corrected into 6% NaCl and 412°.

Card 1/2

05876
The Melting Diagram of the System of Sodium-, Cadmium- and Thallium Chlorides SOV/78-4-11-29/50

There are 2 figures, 3 tables, and 5 references, 3 of which are Soviet.

ASSOCIATION: Rostovskiy-na-Donu inzhenerno-stroitel'nyy institut (Rostov-na-Donu Institute of Civil Engineers)

SUBMITTED: June 22, 1958

Card 2/2

05884

5(2) SOV/78-4-11-37/50

AUTHORS: Golubeva, M. S., Aleshkina, N. N., Bergman, A. G.

TITLE: The Melting Diagram of the Ternary Systems of Sodium- and Potassium Acetates, Rhodanides and Thiosulphates

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 11, pp 2606-2610 (USSR)

ABSTRACT: The reason for investigating these systems was the necessity of finding low-melting baths for sulphidizing the surface of metal products. The binary system $(NaCNS)_2$ - $(CH_3COONa)_2$ forms a eutectic. The binary systems $(NaCNS)_2$ - $Na_2S_2O_3$ and $(CH_2COONa)_2$ - $Na_2S_2O_3$ could not be investigated since the components decompose on heating before they are melted. The ternary system $Na^+ \| CNS^-, S_2O_3^{2-}, CH_3COO^-$ (Table 1, Figs 1, 2) has three crystallization fields of its components meeting in the eutectic point at 222° and the composition of 32% $(CH_3COONa)_2$, 40% $(NaCNS)_2$, 28% $Na_2S_2O_3$. In the binary system $(KCNS)_2$ - $(CH_3COOK)_2$, the compound $2KCNS.CH_3COOK$ melting at 134°

Card 1/2

is formed. The system $(KCNS)_2$ - $K_2S_2O_3$ could only be investigated - because of decomposition of the organic component on heating - up to a content of 35% $K_2S_2O_3$, the system $(CH_3COOK)_2$ - $K_2S_2O_3$ only up to a content of 25% $K_2S_2O_3$. The ternary system $K^+ \| CNS^-, S_2O_3^{2-}, CH_3COO^-$ (Fig 3, Table 2) forms four crystallization fields, three of the components and one of the compound $2KCNS.CH_3COOK$. The two ternary systems could not be completely investigated either, since the thermal stability decreases with an increasing thiosulphate content, and decomposition occurs. There are 5 figures, 2 tables, and 2 Soviet references.

SUBMITTED: June 16, 1958

5(3)

AUTHORS: Arestenko, A. P., Bergman, A. G. SOV/79-29-5-71/75

TITLE: Investigation of the Reaction of Benzidine With Organic Acids (Issledovaniye vzaimodeystviya benzidina s organicheskimi kislotami)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 5, pp 1744-1749 (USSR)

ABSTRACT: The present paper deals with the investigation of the melting point curves of the following two-component systems: a) benzidine and b) acetic acid, propionic acid, n-butyric acid, iso-butyric acid, iso-valerianic acid (Fig 1), benzoic acid or salicylic acid (Fig 2). The following dissociating compounds were probably prepared: $(C_6H_4)_2(NH_2)_2 \cdot CH_3COOH$; $(C_6H_4)_2(NH_2)_2 \cdot CH_3CH_2COOH$; $(C_6H_4)_2(NH_2)_2 \cdot CH_3(CH_2)_2COOH$; $(C_6H_4)_2(NH_2)_2 \cdot (CH_3)_2CHCOOH$; $(C_6H_4)_2(NH_2)_2 \cdot (CH_3)_2CHCH_2COOH$; $(C_6H_4)_2(NH_2)_2 \cdot CH_3(CH_2)_6COOH$; $(C_6H_4)_2(NH_2)_2 \cdot C_6H_5COOH$; $(C_6H_4)_2(NH_2)_2 \cdot 3C_6H_5COOH$; $(C_6H_4)_2(NH_2)_2 \cdot 2HOC_6H_4COOH$. Other compounds are apparently not formed. In the system

Card 1/2

Investigation of the Reaction of Benzidine With Organic Acids

SOV/79-29-5-71/75

benzidine - stearic acid [illegible]composition occurs between 10% and 75% acid content. [illegible]ex formation does not occur in this system. There are [illegible] 1 table and 4 Soviet references.

ASSOCIATION: Kubanskiy sel'skokhozyaystvennyy in[illegible]tut (Kuban' Agricultural Institute)

SUBMITTED: February 16, 1958

Card 2/2

5.4110

77408
SOV/79-30-1-69/78

AUTHORS: Nesterova, A. K., Bergman, A. G.

TITLE: Ternary System--Urea and Acetates of Sodium and Potassium

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 30, Nr 1, pp 317-320 (USSR)

ABSTRACT: Interactions in the ternary system of molten urea and acetates of sodium and potassium were studied in this work. Melting points were measured to $\pm 0.5^{\circ}$ in glass test tubes placed in a glycerol bath, using chemically pure, recrystallized compounds. Figure 1 shows temperature-composition diagrams for the three pairs of binary systems. Urea forms one complex compound with potassium acetate, $CO(NH_2)_2 \cdot CH_3COOK$, with incongruent melting point (transition point) at 95.5° and eutectic point at 80° and 27% CH_3COOK. The two acetates form a compound $2CH_3COOK \cdot CH_3COONa$ with transition point at 238° and eutectic point at 232° and 50% CH_3COONa. The three-component diagram for the system $CO(NH_2)_2$-CH_3COONa-CH_3COOK is shown in Fig. 2.

Card 1/5

Ternary System--Urea and Acetates of Sodium and Potassium

77408
SOV/79-30-1-69/78

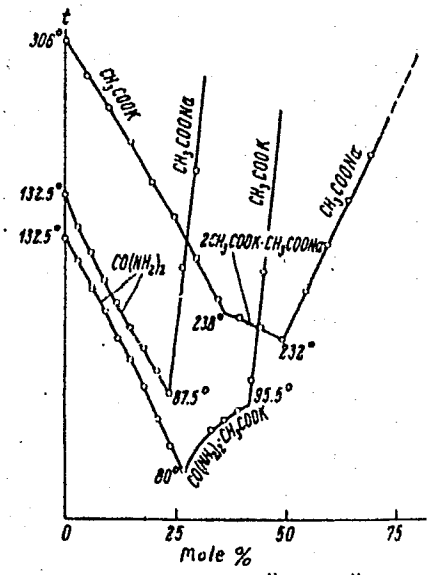


Fig. 1. The binary "side" systems.

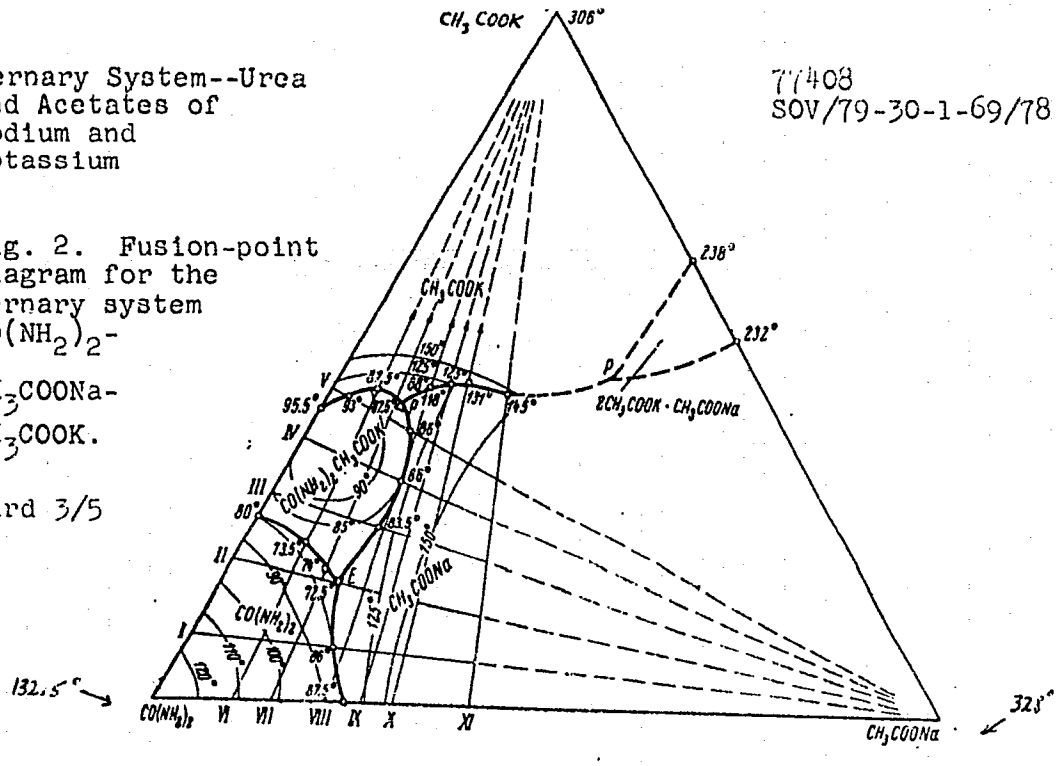
Card 2/5

Ternary System--Urea and Acetates of Sodium and Potassium

77408
SOV/79-30-1-69/78

Fig. 2. Fusion-point diagram for the ternary system $CO(NH_2)_2$-CH_3COONa-CH_3COOK.

Card 3/5



Ternary System--Urea and Acetates of Sodium and Potassium

77408
SOV/79-30-1-69/78

Five crystallization fields can be seen on the surface of the system: two of the complexes, $CO(NH_2)_2 \cdot CH_3COOK$ and $2CH_3COOK \cdot CH_3COONa$ and three of the single components. Figure 3 shows the projection of the conjugate crystallization curves on the side CH_3COOK-$CO(NH_2)_2$.

There are three triple points in the system: (1) eutectic point E [72.5°, 17% CH_3COOK, 15% CH_3COONa, 68% $CO(NH_2)_2$]; (2) transition point P [88°, 43% CH_3COOK, 9% CH_3COONa, 48% $CO(NH_2)_2$]; and (3) the point R, at which the compound $2CH_3COOK \cdot CH_3COONa$ is wedging out. (Abstracter's Note: Point R is not shown on the diagram of Fig. 2. We believe it to be at the apex of the triangle enclosing the $2CH_3COOK \cdot CH_3COONa$ field, and therefore at P (but not at ΔP = = transition point).) It can be seen that the incongruent compound $CO(NH_2)_2 \cdot CH_3COOK$ is being stabilized by the introduction of sodium acetate. There are 3 figures; 1 table; and 5 Soviet references.

Card 4/5

Ternary System--Urea and Acetates of Sodium and Potassium

77408
SOV/79-30-1-69/78

ASSOCIATION: Stalingrad Pedagogic Institute (Stalingradskiy pedagogicheskiy institut)

SUBMITTED: December 10, 1958

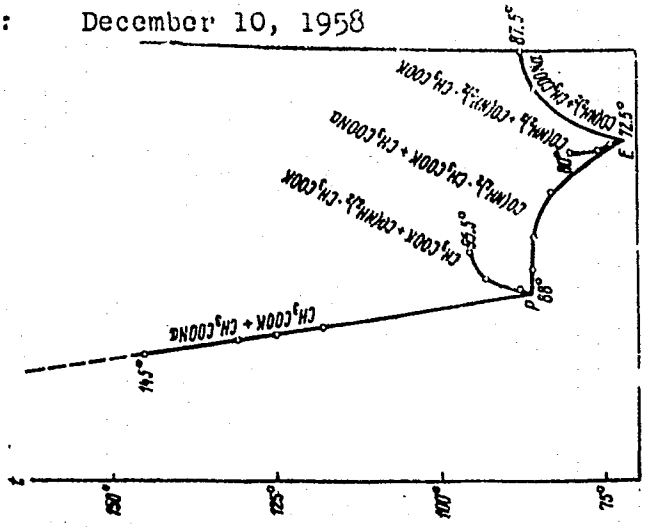


Fig. 3. Projection of the curves of cocrystallization on the side CH_3COOK-$CO(NH_2)_2$.

Card 5/5

5(2) SOV/80-32-3-7/43

AUTHORS: Bergman, A.G., Vyrodov, I.P.

TITLE: The Problem of Hardening Chloromagnesia Cements (K voprosu o tverdenii khlormagnezial'nykh tsementov)

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol XXXII, Nr 3, pp 504-509 (USSR)

ABSTRACT: During hardening of cement oxychlorides are formed. If the content of MgO is increased from 20% to 45%, the oxychloride I is present in the cement. At the ratio MgO : $MgCl_2$ a little higher than 3 : 1, the oxychloride II is present. At the ratio of 5 : 1, the oxychloride III appears. The graph of the maximum temperature rise during the cement formation and the MgO content has two characteristic peaks corresponding to the $MgO/MgCl_2$ ratios 3 : 1 and 5 : 1. The hardening of magnesia cements is due to reactions between $Mg(OH)_2$, $MgCl_2$ and water.

Card 1/2